

PAPER– 2 : MANAGEMENT ACCOUNTING AND FINANCIAL ANALYSIS

QUESTIONS

1. Write a note on dividend theories.
2. Indicate the factors that are relevant for its corporate dividend policy.
3. What are the forms of Dividends?
4. Whether issue of Bonus shares Constitute Dividend.
5. What are the restrictions imposed on the declaration of Dividends by the Board of Directors.
6. The following particulars are furnished to you for calculating the present value of market price per share (PO), by using Gordon's growth model if retention ratio (b) is:

1	-	.1
2	-	.5
3	-	.7
4	-	.9

Growth firm	Normal firm	Declining firm
$r > k$	$r = k$	$r < k$
$r = .15$	$r = .11$	$r = .08$
$k = .10$	$k = .11$	$k = .10$
$E = \text{Rs.}15$	$E = \text{Rs.}11$	$E = \text{Rs.}10$

Comment on the results of your workings.

7. A company has 3 alternative choices of product mix. It produces two products A & B. It can produce,

Either	(i)	200 units of A and 400 units of B.
Or	(ii)	300 units of A and 300 units of B.
Or	(iii)	400 units of A and 200 units of B.

	A	B
	Rs.	Rs.
Selling Prices	400	300
Variable costs	320	240
Fixed expenses		16,500

You have to decide the best product mix.

8. A company is considering the advisability of replacing a certain machine tool by a new sophisticated one of improved design.

Comparative details are as follows:

	Existing machine	New machine
	Rs.	Rs.
Purchase price	50,000	2,00,000
Power cost per year	6,500	6,000
Consumable stores per year	4,000	4,500
Repairs and maintenance	1,500	2,000
Units of output per hour	25	60
Running hours per year	2,000	2,000
Operators rate per hour	2	0.75

The present book value of the existing machine is Rs.25,000, five years of the estimated life of ten years having elapsed.

The depreciation of the new machine whose life is 10 years, will be assessed on the same straight-line basis which is in practice for the existing machine.

In both cases, residual value is to be regarded as Nil for calculating depreciation.

The new machine will cost Rs.5,000 to instal, but the existing machine has a salvage value of Rs.20,000. Find out the average cost per unit of output for each of two machines, and advise the management.

A Notional Interest @ 10% should be considered on cost of machines after taking into consideration the salvage value or installation charges.

9. There are two similar plants under the same management. The management desires to merge these two plants. The following particulars are available:

	Factory I Rs. in lacs	Factory II Rs. in lacs
Capacity operation	100%	50%
Sales	150	60
Variable costs	110	45
Fixed costs	20	10

You are required to calculate (a) what would be the capacity of merged plant to be operated for the purpose of break-even; and (b) what would be the profitability on working at 75% of merged capacity. (c) What would be required turnover to give an overall profit of Rs.50 lakhs.

10. Calculate from the following data (i) value of the output at which the business break-even and (ii) the percentage of capacity at which it breaks-even.

	Budget for the year 2007 Based on 100% capacity	Estimated shut-down expenditure.
	Rs.	Rs.
Direct wages	2,09,964	
Direct materials	2,44,552	
Works expenses	1,81,820	93,528
Administrative expenses	30,000	20,508
Selling and distribution expenses	61,118	40,188
Net Sales	8,40,000	

11. Raj Corporation Ltd. has prepared the following budget estimates for the year 2006-07:

Sales units	15,000
	Rs.
Fixed expenses	34,000
Sales value	1,50,000
Variable costs	Rs.6 per unit

You are required to:

- Find the P/V ratio, break-even point and margin of safety.
- Calculate the revised P/V ratio, break even point and margin of safety in each of the following cases:
 - Decrease of 10% in selling price

- (b) Increase of 10% in variable costs
- (c) Increase of sales volume by 2000 units
- (d) Increase of Rs.6,000 in fixed costs.

12. The 'XYZ' Company manufactures a product which Costs

Fixed (per month)	Rs.1,00,000
Variable (per unit)	Rs.10

Sales are at present 10,000 units per month at Rs.30 per unit.

- (a) A proposal to extend the sales to a foreign market has come where demand for an additional 5,000 units per month is expected. However, in order to do this it will be necessary to absorb additional shipping costs and duties amounting to Rs.12 per unit. Will the foreign business be profitable?
- (b) A domestic chain store has offered to take 5,000 units per month at Rs.18 per unit. Should this order be accepted in the place of the foreign order?
- (c) The sales department proposes to reduce the selling price of the product to increase sales. The following estimates of the sales volume at various prices are made:

30 Rs. per unit (the present price)	10,000 units per month.
25 Rs. per unit	14,000 units per month
20 Rs. per unit	19,000 units per month.

Assuming that the above estimates are correct, should you reduce the price? If so, to what level?

13. The following data relate to the operational activities of a company for a particular period:

Product	A	B	C
	per unit	per unit	per unit
Sale	Rs.110	120	170
Direct labour	20 hrs.	40 hrs.	45 hrs.
Direct material			—
X	Rs.20	25	—
Y	20	—	—
Z	15	10	55
Variable Overhead	15	25	60
Marginal Contribution	20	20	10
Units Sold	1,000	1,000	800
Fixed Cost			Rs.8,000

As a result of settlement with the workers, the wage rate which is uniform at the rate of Re.1 per hour for each of the three Products, will go up by 25% in case of A and by 10% each in respect of Product B and C. The material prices will also increase, the quantum of increase being 10% in respect of X and Y each and 20% in respect of Z.

Present figures showing working results of the Company for the next period and indicate the line of action which the management should take in order to mitigate the adverse effect of rising costs on the net profit.

14. M.M. Kusha & Co. Ltd., has the following five independent investment proposals for its consideration.

Proposal	Initial Cost	Annual Flows after Tax- before depreciation	Life in years
	Rs.	Rs.	
1.	10,00,000	2,50,000	8
2.	2,40,000	24,000	15
3.	1,84,000	30,000	20
4.	11,500	4,000	5
5.	1,00,000	12,000	10

The expected rate of return is 10%. Calculate the following:

- (i) Pay-back period.
 - (ii) Accounting rate of return.
 - (iii) Index of profitability.
 - (iv) Internal rate of return.
15. A company has an investment opportunity costing Rs.40,000 with the following expected net cash flow (i.e., after taxes and before depreciation):

Year	Net Cash Flow Rs.
1	7,000
2	7,000
3	7,000
4	7,000
5	7,000
6	8,000
7	10,000
8	15,000
9	10,000
10	4,000

Using 10% as the cost of capital, determine the following:

- (a) Pay-back period.
- (b) Net present value at 10% discounting factor.
- (c) Profitability Index at 10% discount factor.
- (d) Internal rate of return with the help of 10% discounting factor and 15% discount factor.

Year	Present Value of Re.1 Discounting Factor	10% Discounting Factor	15% Discounting Factor
1	0.909		0.870
2	0.826		0.756
3	0.751		0.658
4	0.683		0.572
5	0.621		0.497
6	0.564		0.432
7	0.513		0.376

8	0.467	0.327
9	0.424	0.284
10	0.386	0.247

16. Precision Engineers Private Ltd. are producing to specified orders. Their factory capacity is limited by one major machine forming a critical cost centre through which all products pass. The factory normally works for 250 days in a year, on 24 hours, 3 shifts a day and 5-days a week basis. The maximum achievable capacity is 80% corresponding to the average level of activity in the critical cost centre. The operating results, summarised for management, for the year ended 31st March, 2007 are as follows:

		(Rs. Lakhs)
Sales		48.00
Less: Materials	18.00	
Labour – Variable	5.75	
Factory- Variable	6.25	
Factory – Fixed	3.00	
Selling and Administration	<u>10.00</u>	<u>43.00</u>
Profit		<u>5.00</u>

The average profitability experienced during 2007 is being maintained during the next year also.

The company has an opportunity of taking any one of the following two large contracts, either of which will substitute for a large amount of current production without affecting the hourly variable production costs. Details of the contracts are:

	Contract X	Contract Y
	Rs.	Rs.
Material cost per unit	375	1,750
Machine hours (critical cost can be) per unit	2	3
Contract price per unit	1,500	3,750
Extra Selling Expenses per unit	25	50

Prepare a Report to the Managing Director making your recommendations as to which of the two contracts is to be preferred.

17. The estimated investment and net resultant annual cash flow of each of four mutually exclusive projects are shown below (negative items are in brackets):

Project	Years	A	B	C	D
		Rs.	Rs.	Rs.	Rs.
"	0	(1,50,000)	(3,00,000)	(3,00,000)	(75,000)
"	1	30,000	1,05,000	-	34,500
"	2	30,000	1,05,000	-	30,000
"	3	30,000	1,05,000	-	15,000
"	4	30,000	1,05,000	-	15,000
"	5	30,000	1,05,000	-	-
"	6	30,000	-	3,00,000	-
"	7	30,000	-	3,00,000	-
"	8	30,000	-	3,00,000	-
"	9	30,000	-	3,00,000	-
"	10	30,000	-	-	-

The management have calculated the internal rate of return on each as:

15% 22% 20% 12%

and have announced their decision to undertake B as its return is highest and covers the company's cost of capital of 10%.

You are required to state, with reasons, whether you consider this procedure to be satisfactory and, if you consider that it is not, to provide an alternative calculation and explain to the management briefly but clearly the reasoning underlying your choice of method.

18. Alfa Engineering Works Ltd. had the following annual budget for the year ending on 31st March, 2007.

Production capacity	60%	80%
Costs:		(Rs. in Lakhs)
Direct Materials	9.60	12.80
Direct Labour	7.20	9.60
Factory Expenses	7.56	8.04
Administrative Expenses	3.72	3.88
Selling and Distribution Expenses	<u>4.08</u>	<u>4.32</u>
Total	32.16	38.64
Profit	<u>4.86</u>	<u>10.72</u>
Sales	<u>37.02</u>	<u>49.36</u>

Owing to adverse trading conditions, the company has been operating during April/June, 2006 at 40% capacity, realizing budgeted selling prices.

Owing to acute competition, it has become inevitable to reduce prices by 25% even to maintain the sales at the existing level. The directors are considering whether or not their factory should be closed down until the trade recession has passed. A market research consultant has advised that in about a year's time there is every indication that sales will increase to 75% of normal capacity and that the revenues to be produced for a full year at that volume could be expected to be Rs.40 lakhs.

If the directors decide to close down the factory for a year it is estimated that:

- The present fixed costs would be reduced to Rs.6 lakhs per annum;
- Closing down costs (redundancy payment, etc.) would amount to Rs.2 lakhs;
- Necessary maintenance of plant would cost Rs.50,000 per annum; and
- On re-opening the factory; the cost of overhauling the plant, training and engagement of new personnel would amount to Rs.80,000.

Prepare a report for the directors, making your recommendations.

19. A company manufacturing a consumer product and marketing through its net work of 400 depots all over the country is considering closing down the depots and resorting to dealership arrangement. The total turnover of the company is Rs.200 crores p.a. The average turnover costs, etc., in respect of a depot is given below:

	Rs.
Annual Turnover	50 lakhs
Average Inventory	5 lakhs
Administrative Expenses	50,000 p.a.
Staff Salary	80,000 p.a.

The inventory carrying cost is 16% p.a. which is the rate for working capital finance.

Marketing through dealers would involve engaging dealers for each area. The dealers will assume a minimum sale for each area. This would result in increasing the capacity utilization from 75% as at present to 90%. The company's P/V ratio at present is 10% and the BEP is 50% of the capacity. The current profit is Rs.150 lakhs.

Marketing through dealers would involve payment of a commission of 5% on sales. But 50% of existing depot staff will have to be absorbed in the company. The dealers will deposit Rs.5 crores with the company on which interest at 12% p.a. will be paid.

- (1) You are required to work out the impact on profitability of the company by accepting the proposal.
 - (2) What will be your reaction if the commission to dealers is 4% on sales.
20. (a) Calculate economic value added (EVA) with the help of the following information of Hypothetical Limited:

Financial leverage	:	1.4 times
Capital structure	:	Equity Capital Rs.170 lakhs Reserves and surplus Rs.130 lakhs 10% Debentures Rs.400 lakhs
Cost of Equity	:	17.5%
Income Tax Rate	:	40%

- (b) A has invested in three Mutual Fund Schemes as per detailed below:

	MF A	MF B	MF C
Date of investment	01.12.2003	01.12.2004	01.12.2004
Amount of investment	Rs.50,000	Rs.1,00,000	Rs.50,000
Net Asset Value (NAV) at entry date	Rs.10.50	Rs.10	Rs.10
Dividend received upto 31.03.2004	Rs.950	Rs.1,500	Nil
NAV as at 31.03.2004	Rs.10.40	Rs.10.10	Rs.9.80

Required:

What is the effective yield on per annum basis in respect of each of the three schemes to Mr. A upto 31.03.2004?

- (c) Explain the term 'Exposure Netting', with an example.
 - (d) Distinguish between Money market and Capital Market.
21. (a) Fair finance, a leasing company, has been approached by a prospective customer intending to acquire a machine whose Cash Down price is Rs.3 crores. The customer, in order to leverage his tax position, has requested a quote for a three year lease with rentals payable at the end of each year but in a diminishing manner such that they are in the ratio of 3:2:1. Depreciation can be assumed to be on straight line basis and Fair Finance's marginal tax rate is 35%. The target rate of return for Fair Finance on the transaction is 10%.
- Required:
- Calculate the lease rents to be quoted for the lease for three years.
- (b) Explain briefly about Net Asset Value (NAV) of a Mutual Fund Scheme.
22. (a) Which position on the index future gives a speculator, a complete hedge against the following transactions:
- (i) The share of Right Limited is going to rise. He has a long position on the cash market of Rs.50 lakhs on the Right Limited. The beta of the Right Limited is 1.25.

- (ii) The share of Wrong Limited is going to depreciate. He has a short position on the cash market of Rs.25 lakhs on the Wrong Limited. The beta of the Wrong Limited is 0.90
- (iii) The share of Fair Limited is going to stagnant. He has a short position on the cash market of Rs.20 lakhs of the Fair Limited. The beta of the Fair Limited is 0.75.
- (b) Distinguish between Forfeiting and Factoring.
23. (a) Given below is information of market rates of Returns and Data from two Companies A and B:

	Year 2005	Year 2006	Year 2007
Market (%)	12.0	11.0	9.0
Company A (%)	13.0	11.5	9.8
Company B (%)	11.0	10.5	9.5

Required:

- (i) Determine the beta coefficients of the Shares of Company A and Company B.
- (ii) Distinguish between 'Systematic risk' and Unsystematic risk'.
- (b) The following information is provided related to the acquiring Firm mark Limited and the target Firm Mask Limited:

	Firm Mark Limited	Firm Mask Limited
Earning after tax (Rs.)	2,000 lakhs	400 lakhs
Number of shares outstanding	200 lakhs	100 lakhs
P/E ratio (times)	10	5

Required:

- (i) What is the Swap Ratio based on current market prices?
- (ii) What is the EPS of Mark Limited after acquisition?
- (iii) What is the expected market price per share of Mark Limited after acquisition, assuming P/E ratio of Mark Limited remains unchanged?
- (iv) Calculate gain/loss for shareholders of the two independent companies after acquisition.
- (c) Explain the terms 'Intrinsic value of an option' and the 'Time value of an option'.
24. Best of Luck Ltd, London will have to make a payment of \$3,64,897 in six month's time. It is currently 1st October. The company is considering the various choices it has in order to hedge its transaction exposure.

Exchange rates:

Spot rate	\$1.5617 – 1.5773
Six-month forward rate	\$1.5455 – 1.5609

Money market rates:

	Borrow(%)	Deposit(%)
US	6	4.5
UK	7	5.5

Foreign currency option prices (1 unit is £12,500):

Exercise price	Call option (March)	Put option (March)
\$1.70	\$0.037	\$0.096

By making the appropriate calculations and ignoring time value of money (in case of Premia) decide which of the following hedging alternatives is the most attractive to Best of Luck Ltd:

- (a) Forward market
- (b) Cash (Money) market;
- (c) Currency options.

25. Companies A and B face the following interest rates:

	A	B
U.S. dollars (floating rate)	LIBOR + 0.5%	LIBOR + 1.0%
Canadian (fixed rate)	5.0%	6.5%

Assume that A wants to borrow U.S. dollars at a floating rate of interest and B wants to borrow Canadian dollars at a fixed rate of interest. A financial institution is planning to arrange a swap and requires a 50 basis point spread. If the swap is equally attractive to A and B, what rates of interest will A and B end up paying?

26. A German firm buys a call on \$10,00,000 with a strike of DM1.60/\$ and a premium of DM 0.03/\$. The interest opportunity cost is 6% p.a. and the maturity is 180 days.

- (a) What is the break even maturity spot rate beyond which the firm makes a net gain?
- (b) Suppose the six month forward rate at the time the option was bought was DM1.62/\$. What is the range of maturity spot rate for which the option would prove to be better than the forward cover? For what range of values would the forward cover be better?

27. The risk free return is 10% and the risk premium is 5% with beta of a company is 1.6. The company had declared the latest dividend @ Rs.3 (2002) whereas it had declared a dividend of Rs.2.115 in the year 1997. The company's earnings and the dividend experienced constant growth. Find out the intrinsic value of the shares. Take into account the following PV factor table value if useful.

Percentage of Cost of capital	PV Values at the end of 6 years
5%	0.746
6%	0.705
7%	0.666

28. Europium Ltd. has been specially formed to undertake two investment opportunities. The risk and return characteristics of the two projects are shown below:

	A	B
Expected return	12%	20%
Risk	3%	7%

Europium plans to invest 80% of its available funds in Project A and 20% in B. The directors believe that the correlation co-efficient between the returns of the projects is +1.0.

Required:

- (a) Calculate the returns from the proposed portfolio of Projects A and B;
 - (b) Calculate the risk of the portfolio;
 - (c) Suppose the correlation co-efficient between A and B was -1 . How should the company invest its funds in order to obtain zero risk portfolio.
29. (a) Discuss briefly the impact of taxation on Corporate Financial Management.
- (b) XYZ Limited pays no taxes and is entirely financed by equity shares. The equity share has a beta of 0.6, a price-earning ratio of 12.5 and is priced to offer an expected return of 20 per

cent. XYZ Ltd. Now decides to buy back half of the equity shares by borrowing an equal amount. If the debt yields a riskfree return of 10%, calculate:

- (i) The beta of the equity shares after the buyback.
- (ii) The required return and risk premium on the equity shares before the buyback.
- (iii) The required return and risk premium on the equity shares after the buyback.
- (iv) The required return on debt.
- (v) The percentage increase in expected earnings per share.
- (vi) The new price-earning multiple.

Assume that the operating profit of the firm is expected to remain constant in perpetuity.

(c) Briefly explain the meaning and importance of 'Credit-rating'.

30. A customer with whom the Bank had entered into 3 months' forward purchase contract for Swiss Francs 10,000 at the rate of Rs. 27.25 comes to the bank after 2 months and requests cancellation of the contract. On this date, the rates, prevailing, are :

Spot	CHF 1 = Rs. 27.30	27.35
One month forward	Rs. 27.45	27.52

What is the loss/gain to the customer on cancellation?

31. Welsh Limited is faced with a decision to purchase or acquire on lease a mini car. The cost of the mini car is Rs. 1,26,965. It has a life of 5 years. The mini car can be obtained on lease by paying equal lease rentals annually. The leasing company desires a return of 10% on the gross value of the asset. Welsh Limited can also obtain 100% finance from its regular banking channel. The rate of interest will be 15% p.a. and the loan will be paid in five annual equal instalments, inclusive of interest. The effective tax rate of the company is 40%. For the purpose of taxation it is to be assumed that the asset will be written off over a period of 5 years on a straight line basis.
- (a) Advise Welsh Limited about the method of acquiring the car.
 - (b) What should the annual lease rental to be charged by the leasing company to match the loan option?

For your exercise use the following discount factors:

Discount rate	Years				
	1	2	3	4	5
10%	0.91	0.83	0.75	0.68	0.62
15%	0.87	0.76	0.66	0.57	0.49
9%	0.92	0.84	0.77	0.71	0.65

32. Companies X and Y are in the same business line generating Annual cash flows of Rs.15/- lakhs and Rs.8 lakhs respectively. If the two firms decides to merge together, a post tax cost savings of Rs.2/- lakhs every year is expected to occur. X Ltd. proposes to absorb Y Ltd on paying a cash consideration of Rs.140/- lakhs. The cost of capital is 15%. What are the merger gains to be allocated to shareholders.

SUGGESTED ANSWERS/HINTS

1. Dividend Theories: One must examine as to what extent dividend policy influences share prices. There is a lot of controversy in regard to the influence of dividend policy on valuation of shares. In this connection there are two concepts:
 - (a) Relevance Concept of Dividend.
 - (b) Irrelevance Concept of Dividend.

Walter and Gordon argue that there is direct relationship between dividend policies and market value of shares. But Modigliani and Miller argue that value of a firm is determined by its earning potentiality and investment pattern and not by dividend distribution.
2. The following factors are to be considered for determining the dividend policy:
 - (a) Legal restrictions & restrictions by Financial institutions.
 - (b) Discretion of directors.
 - (c) Investment opportunities and need for expansion.
 - (d) Cost of capital.
 - (e) Management's objectives and its attitude.
 - (f) Position of liquidity & financial solvency.
 - (g) Tax considerations.
 - (h) Regularity and stability of Dividends or irregularity of Dividends.
 - (i) Preference or desire of shareholders to have long-term capital gains or short-term dividend income.
 - (j) Accumulated profits, current earnings and estimation of future earnings.
 - (k) Nature of Business & Business cycle.
 - (l) Conventions and Customs.
 - (m) Contingencies.
 - (n) General state of economy.
 - (o) Position of capital market and access to capital market for external financing.
 - (p) Age and growth rate of firm.
 - (q) Repayment schedule of debt and debentures.
 - (r) Ownership of firm i.e. closely held or widely held.
3. There are six forms of dividends as follows:
 - (i) Cash Dividend.
 - (ii) Stock dividends or Bonus shares.
 - (iii) Scrip Dividends.
 - (iv) Bond Dividends
 - (v) Optional Dividends.
 - (vi) Liquidation Dividends.
4. The Income-Tax Act, 1961 has defined dividend as distribution of accumulated profits, if, such distribution entails a release of the assets or part thereof. Accumulated profits include amounts of development rebate and not depreciation reserves. Dividends cannot be paid out of Capital Reserves. Dividends are generally paid in cash. But issue of bonus shares does not involve any release of assets (cash) hence does not constitute dividend.

Stock dividend is in the form of issue of bonus shares to the existing shareholders in lieu or addition to the cash dividend. The networth is not affected by stock dividend. Thus the stock dividend has no impact on the wealth of shareholders. This is also commonly known as the melon.

5. The following restrictions have been imposed on the declaration of dividends by the Board of Directors:

- (i) Provision of depreciation to be made.
- (ii) Declaration of Dividend by the Board of Director should be lawful. It should be in confirmatory of other statutes in force.
- (iii) Rights of creditors to be protected.
- (iv) Dividends to be paid out of accumulated profits and not out of capital.

6. Gordon Model = $\frac{E_1(1-b)}{k-b_r}$

Where

- E_1 = Earning per share
 b = retention ratio
 k = Cost of Capital
 b_r = growth (g)
 p_0 = Market Price per share.

When retention ratio

$(b) = .1$ Payment ratio = .9

$G = b_r = .1 \times .15 = 0.015$

$b_r = .1 \times .11 = .011$

$b_r = .1 \times .08 = .008$

Growth Firm

Normal Firm

Declining Firm

$P_0 = \frac{Rs.15(1-.1)}{.10-.015}$

$P_0 = \frac{Rs.11(1-.1)}{.11-.011}$

$P_0 = \frac{Rs.10(1-.1)}{.08-.008}$

$P_0 = \frac{13.5}{.085} = Rs.158.82 \text{ i.e. } Rs.159/-$

$P_0 = \frac{9.9}{.099} = Rs.100$

$P_0 = \frac{9}{.072} = Rs.125$

When retention ratio

Payment ratio is also .5

i.e., $b = .5$

$g = b_r = .5 \times .15 = 0.075$

$b_r = .5 \times .11 = 0.055$

$b_r = .5 \times .08 = 0.04$

$P_0 = \frac{Rs.15(1-.5)}{.10-.075}$

$P_0 = \frac{Rs.11(1-.5)}{.11-.055}$

$P_0 = \frac{Rs.10(1-.5)}{.08-.04}$

$\frac{7.5}{0.025} = Rs.300$

$= \frac{5.5}{.055} = Rs.100$

$= \frac{5}{.04} = Rs.125$

When retention ratio

Payout ratio is 0.3

$b = .7$

$g = .7 \times .15 = .105$

$g = .7 \times .11 = .077$

$g = .7 \times .08 = 0.056$

$P_0 = \frac{Rs.15(1-.7)}{.10-.105}$

$P_0 = \frac{Rs.11(1-.7)}{.11-.077}$

$P_0 = \frac{Rs.10(1-.7)}{.08-.056}$

$P_0 = (-) \frac{4.5}{.005} = (-)Rs.900/-$

$P_0 = \frac{3.3}{.033} = Rs.100$

$P_0 = \frac{3}{0.024} = Rs.125$

When retention ratio

$$b = .9$$

$$g = .9 \times .15 = 0.135$$

$$P_0 = \frac{15(1-.9)}{.10-0.135}$$

$$P_0 = (-) \frac{1.5}{.035} = (-) \text{Rs.} 43/-$$

$$g = .9 \times .11 = .099$$

$$P_0 = \frac{\text{Rs.} 11(1-.9)}{.11-.099}$$

$$P_0 = \frac{1.1}{.011} = \text{Rs.} 100$$

$$g = .08 \times .9 = .072$$

$$P_0 = \frac{\text{Rs.} 10(1-.9)}{.08-.072}$$

$$P_0 = \frac{1}{.008} = \text{Rs.} 125/-$$

Comments:

(i) In the case of growth firms, higher the retention ratio, higher is the market value of shares except when $k - b_r$ is negative. One of the assumption of Gordon is that k should be more than b_r . If $k - b_r$ is negative, the absurd results will be obtained. This is evident in case of growth firm where the retention ratio is .7 and .9 in the above table. The market price of the share became negative which is an absurd result. The market value of the share may be zero but it will never become negative.

(ii) There is no impact of retention ratio in the case of normal firms and declining firms.

7.

(Amount in Rs.)

Marginal Cost Statement			Product A	Product B
		Selling price	400	300
		Less Variable costs	320	240
		Marginal contribution per unit	80	60
Case	(i)	Contribution from 200 units of A = $200 \times 80 =$		16,000
		Contribution from 400 units of B = $400 \times 60 =$		<u>24,000</u>
		Total Contribution		40,000
	$\therefore$	Profit = C - F = $40,000 - 16,500 =$		<u><u>23,500</u></u>
Case	(ii)	Contribution from 300 units of A = 300×80		24,000
		Contribution from 300 units of B = $300 \times 60 =$		<u>18,000</u>
		Total Contribution		42,000
		Profit = $42,000 - 16,500 =$		<u><u>25,500</u></u>
Case	(iii)	Contribution from 400 units of A = $400 \times 80 =$		32,000
		Contribution from 200 units of B = $200 \times 60 =$		<u>12,000</u>
		Total Contribution		44,000
		Profit = $44,000 - 16,500 =$		<u><u>27,500</u></u>
Case	(iii)	Gives the highest contribution and hence it should be selected.		

8. Comparative Cost Statement

	Existing Machine		New Machine	
	Rs.		Rs.	
Capital cost, including installation	50,000		2,05,000	
Running hours per annum	2,000		2,000	
Units of output per hour	25		60	
Annual output (units)	50,000		1,20,000	
Comparative Cost per Annum	Gross	Per unit	Gross	Per unit
	Rs.	P.	Rs.	P.
Marginal Cost:				
Power	6,500		6,000	
Consumable Stores	4,000		4,500	
Repairs and maintenance	1,500		2,000	
Operators wages	4,000		1,500	
	16,000	32	14,000	11.67
Fixed Cost:				
Depreciation 1/5 of 25,000	5,000	10	20,500	17.08
1/10 of 20,5000				
Total Cost	21,000	42	34,500	28.75
*Add: Interest on capital (say 10 per cent on capital value)	3,000	06	20,500	17.08
	24,000	48	55,000	45.83
*(10 per cent on capital value, less salvage value). The new machine is advisable.				

9. For the purpose of merging both the plants it is essential to work out IInd factory's turnover, variable costs and contribution at 100% capacity.

			Amount Rs. in lakhs
	Factory 1	Factory II	
Turnover	150	$120 = \left(\frac{60}{50} \times 100 \right)$	270
Less: Variable Costs	<u>110</u>	$90 = \left(\frac{45}{1} \times \frac{100}{50} \right)$	<u>200</u>
Contribution	40	30	70
Less: Fixed Cost	<u>20</u>	<u>10</u>	<u>30</u>
Profit	<u>20</u>	<u>20</u>	<u>40</u>
P/V Ratio = $\frac{\text{Contribution}}{\text{Turnover}}$	26.67%	25%	26%

(a) Break-Even Sales for merged plants

$$\frac{\text{Total fixed costs}}{\text{Total P / V Ratio}} = \frac{30 \text{ lakhs}}{26\%} = \text{Rs.115.4 lakhs}$$

(b) Profitability on working at 75% of the integrated capacity is 8.64% calculated as follows:-

Contribution at 100% integrated capacity	70 lakhs.
Contribution at 75% integrated capacity	52.50 lakhs = $\left(\frac{70}{100} \times 75\right)$
Less: Fixed overheads (i.e. total integrated capacity)	<u>30.00</u> lakhs.
Profit	17.50

Rs. in lakhs

Sales at 100% integrated capacity 270

$$\therefore \text{Sales at 75\% integrated capacity} = \frac{270}{100} \times 75 = 202.50$$

$$\text{Percentage of profit at 75\% integrated capacity} = \frac{17.50}{202.50} \times 100 = 8.64\%$$

(c) Turnover required to give an overall profit of Rs.50 lakhs.

Contribution = Fixed costs + Desired profit

$$= \text{Rs.30 lakhs} + 50 \text{ lakhs} = \text{Rs.80 lakhs}$$

$$\text{Sales required} = \frac{\text{Contribution}}{\text{P/V Ratio}}$$

$$= \frac{80 \text{ lakhs}}{26\%} = 80 \text{ lakhs} \times \frac{100}{26} = 307.69 \text{ lakhs.}$$

10. Break-even Analysis for 2007

Budget at 100% Capacity (Amount in Rs.)

	Total	Fixed (Shut-down) expenses	Variable expenses
Direct materials	2,44,552	-	2,44,552
Direct wages	2,09,964	-	2,09,964
Works expenses	1,81,820	93,528	88,292
Administration expenses	30,000	20,508	9,492
Selling and Distribution expenses	61,118	40,188	20,930
	<u>7,27,454</u>	<u>1,54,224</u>	<u>5,73,230</u>
Profit	1,12,546		
Sales	<u>8,40,000</u>		

$$(i) \text{ P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

$$= \frac{1,12,546 + 1,54,224}{8,40,000} \times 100 = 31.76\%$$

$$\text{Sales at BEP} = \frac{\text{Fixed expenses}}{\text{P / V Ratio}}$$

$$= \frac{1,54,224}{31.76} \times 100 = \text{Rs.} 4,85,592$$

(ii) Percentage of capacity at which business breaks-even -

$$= \frac{4,85,592 \times 100}{8,40,000} = 57.81\%$$

11.

PV Ratio	Break-even Point (sales)	Margin of Safety (units) Sales – BE Sales
$\frac{\text{Contribution}}{\text{Sale price}} \times 100$	$\frac{\text{Fixed Costs}}{\text{Contribution per unit}}$	
(i) As per original data $\frac{10 - 6}{10} \times 100 = 40\%$	$\frac{34,000}{4} = 8,500 \text{ units}$	15,000 - 8,500 = 6,500 units
(ii) (a) In case of decrease of 10% in selling price $\frac{9 - 6}{9} \times 100 = 33.33\%$	$\frac{34,000}{3.00} = 11,333 \text{ units}$	15,000 – 11,333 = 3,667 units.
(b) Increase of 10% in variable costs $\frac{10 - 6.60}{10} \times 100 = 34\%$	$\frac{34,000}{3.4} = 10,000 \text{ units}$	15,000 – 10,000 = 5,000 units
(c) Increase of sales by 2,000 units $\frac{10 - 6}{10} \times 100 = 40\%$	$\frac{34,000}{4} = 8,500 \text{ units.}$	17,000 - 8,500 = 8,500 units
(d) Increase of Rs.6,000 in fixed costs $\frac{10 - 6}{4} = 40\%$	$\frac{40,000}{4} = 10,000 \text{ units}$	15,000 - 10,000 = 5,000 units

Notes:

- (1) The break-even point and margin of safety may be expressed in sales value as well. Students are advised to workout the same.
- (2) The selling price per unit is Rs.10, i.e., Rs.1,50,000 ÷ 15,000.

12. (a) Differential Cost of 5,000 units:

		Rs.
5,000 @ Rs.12 per unit		60,000
Incremental Gain		
Sales revenue for 5,000 units @ 30 per unit	Rs.1,50,000	
Less: Variable Cost at Rs.10 per unit	<u>50,000</u>	<u>1,00,000</u>
Incremental Gain		40,000

The foreign business will be profitable since it gives a net incremental gain at Rs.40,000.

(b) Supply of 5,000 units to a domestic chain store:

	Rs.
Sales revenue for 5,000 units @ Rs.18	90,000
Less: Variable Cost @ Rs.10	<u>50,000</u>
Incremental Gain	<u>40,000</u>

On the basis of the incremental gain, the proposal to sell the additional 5,000 units to a local chain store is equally desirable. However, the price differential in the local market may effect the sale of 10,000 units at Rs.30. Hence, however, between the two proposals, the extension of sales to the foreign market is more desirable.

(c) Price reduction:

	Rs.
10,000 units @ Rs.30 per unit	3,00,000
Less: Variable Cost at Rs.10	<u>1,00,000</u>
Contribution	2,00,000
Less: Fixed Cost	<u>1,00,000</u>
Net Profit	<u>1,00,000</u>
14,000 units @ Rs.25 per unit	3,50,000
Less: Variable Cost	<u>1,40,000</u>
Contribution	2,10,000
Less: Fixed Cost	<u>1,00,000</u>
Net Profit	<u>1,10,000</u>
19,000 units @ Rs.20 per unit	3,80,000
Less: Variable Cost	<u>1,90,000</u>
Contribution	1,90,000
Less: Fixed Cost	<u>1,00,000</u>
Net Profit	<u>90,000</u>

Thus price should be reduced to Rs.25 per unit, since net profit at this sales price will be Rs.1,10,000 which is highest as compared with other alternatives.

13.

Operating Statement

	Product A	Product B	Product C	Total
Sale Price	<u>110.00</u>	<u>120.00</u>	<u>170.00</u>	---
Direct labour	25.00	44.00	49.50	
Direct material X	22.00	27.50	---	

Y	22.00	---	----	
Z	18.00	12.00	66.00	
Variable overhead	<u>15.00</u>	<u>25.00</u>	<u>60.00</u>	
	102.00	108.50	175.50	
Contribution Margin	8.00	11.50	- 5.50	
Units Sold	1,000	1,000	800	
Total Contribution	8,000	11,500	- 4,400	15,100
Fixed Cost				<u>8,000</u>
	Profit			<u>7,100</u>

Contribution in each previous period-

Product A -	1000x20 =	20,000	
Product B -	1000x20 =	20,000	
Product C -	800 x 10 =	<u>8,000</u>	48,000
Less: Fixed Cost			<u>8,000</u>
Profit			<u>40,000</u>

It would be seen from the above operating statement that due to rise in wage rate and material cost total profit has declined from Rs.40,000 to Rs.7,100. Secondly, Product C has become not only unprofitable it is now incurring losses as it is making a negative contribution of Rs.5.50 per unit. If this product is discontinued then the total profit will rise to Rs.11,500. Since Product B is most profitable, the direct labour (assuming it to be the limiting factor) of 36,000 hours (45 hrs. x 800 units) released by the discontinuation of product C may be utilized to produce 900 more units

of Product B $\left(\frac{36,000}{40 \text{ hrs.}} = 900 \text{ units} \right)$. This arrangement will lead to a rise in profit by Rs.10,350

(Rs.11.50 x 900 units = Rs.10,350) provided the additional output of Product B can be sold at the same price.

14. (i) Pay – back period = $\frac{\text{Net Investment}}{\text{Average annual operating cash flow (Less tax)}}$

$$\begin{aligned} \text{Proposal 1} &= \frac{10,00,000}{2,50,000} = 4 \text{ years} \\ \text{Proposal 2} &= \frac{2,40,000}{24,000} = 10 \text{ years} \\ \text{Proposal 3} &= \frac{1,84,000}{30,000} = 6.13 \text{ years approximately} \\ \text{Proposal 4} &= \frac{11,500}{4,000} = 2.9 \text{ years approximately} \\ \text{Proposal 5} &= \frac{1,00,000}{12,000} = 8.33 \text{ years approximately} \end{aligned}$$

Note: The Pay-back period is less than the estimated life of machines in all these proposals.

(ii) Accounting rate of return

$$\text{Proposal 1} - \text{Total cash flows } 2,50,000 \times 8 = 20,00,000$$

$$\text{Average annual profit} = \frac{20,00,000}{8} = 2,50,000$$

$$\text{Accounting rate of return} = \frac{2,50,000 \times 100}{10,00,000} = 25\%$$

$$\text{Proposal 2 - Accounting rate of return} = \frac{24,000 \times 100}{2,40,000} = 10\%$$

$$\text{Proposal 3 - Accounting rate of return} = \frac{30,000 \times 100}{1,84,000} = 16.30\%$$

$$\text{Proposal 4 - Accounting rate of return} = \frac{\text{Rs. } 4,000 \times 100}{11,500} = 34.78\%$$

$$\text{Proposal 5 - Accounting rate of return} = \frac{\text{Rs. } 12,000 \times 100}{1,00,000} = 12\%$$

(iii) Index of Profitability:

$$\text{Formula: } \frac{\text{Present value of future net cash flows}}{\text{Initial cash outlay}}$$

Cash Flows				
Proposals	Discount Rate	Present value of an Annuity	Net cash flow after tax-before Depreciation each year	Present value of cash flows (3x4)
(1)	(2)	(3)	(4) Rs.	(5) Rs.
1	10%	5.3349	2,50,000	1,333,725
2	10%	7.6061	24,000	182,546
3	10%	8.5136	30,000	255,408
4	10%	3.7908	4,000	15,163
5	10%	6.1446	12,000	73,735

$$\text{Profitability Index} = \frac{\text{Present value of cash flows}}{\text{Present value of cash outflows}}$$

$$\text{Proposal 1} \quad \frac{13,33,775}{1,000,000} = 1.33$$

$$\text{Proposal 2} \quad \frac{1,82,546}{2,40,000} = .76$$

$$\text{Proposal 3} \quad \frac{2,55,408}{1,84,000} = 1.39$$

$$\text{Proposal 4} \quad \frac{15,163}{11,500} = 1.3$$

$$\text{Proposal 5} \quad \frac{73,735}{1,00,000} = .74$$

Note: Since profitability index of these proposals is more than 1, except proposal 2 & 5. Hence, proposal 1,3 and 4 may be considered for acceptance.

(iv) Internal Rate of Return:

$$A_0 = \frac{A_1}{(1+r)} + \frac{A_2}{(1+r)^2} + \frac{A_n}{(1+r)^n}$$

Where r is the rate that discounts the stream of future cash flows, A_1 through A_n – to equal the initial outlay at time $O-A_0$

Proposal 4 can be expressed as

$$11500 = \frac{4000}{(1+r)} + \frac{4000}{(1+r)^2} + \frac{4000}{(1+r)^3} + \frac{4000}{(1+r)^4} + \frac{4000}{(1+r)^5}$$

Here we want to determine the discount factor that, when multiplied by Rs.4,000, equals the cash outlay of Rs.11,500 at time O . Suppose we start with three discount rates 22%, 20% and 18% discount rates we find as follows:

Discount Rate	Discount Factor	Cash flow each year	Present value of stream
22%	2.8636	4,000	11,454
20%	2.9906	4,000	11,962
18%	3.1272	4,000	12,508

When we compare the present value of the stream with the initial outlay of Rs.11,500, we see that the internal rate of return necessary to discount the stream to Rs.11,500 falls between 22% and 20%, being closer to 22% than to 20% to be more accurate, we interpolate between 20% and 22% as follows:

Discount rate	Present value
	Rs.
20%	11,962
21%	11,704 (2.9260 x 4000)
1%	Rs.258
Difference	

$$\frac{508}{258} = 1.97 = 20\% + 1.97 = 21.97\%$$

Thus, the internal rate of return necessary to equate the present value of the cash flows with the present value of outflows is approximately 21.97% or 22%.

Proposal 1

Discount Rate	Discount Factor	Cash flow each year	Present value of stream
22%	3.6193	250,000	904,825
20%	3.8372	250,000	959,300
18%	4.0776	250,000	1,019,400

When we compare the present value of stream with the initial outlay of Rs.10,00,000, we find that the internal rate of return falls between 18 and 20%, being closer to 18 than to 20%. We interpolate and find as follows:

Discount rate	Present value
18%	10,19,400

	19%	9,88,600
Difference	1%	30,800

$$\frac{60,100}{30,800} = 1.95\% =$$

$$\text{IRR} = 18 + 1.95 = 19.95\%$$

Note: Students are advised to calculate Internal rate of return of other projects.

15. (a) Pay-back period

Since the cash flow is uneven, the following procedure will be followed:

Rs.7,000x 5 = Rs.35,000 to be recovered in the first five years.

$$+ \frac{5,000}{8,000} = 5 \frac{5}{8} \text{ years.}$$

(b) Net present value at 10% discounting factor:

10%	Discounting Factor	Cash Flow Rs.	Total Cash Flows Rs.
	.909	7,000	6,363
	.826	7,000	5,782
	.751	7,000	5,257
	.683	7,000	4,781
	.621	7,000	4,347
	.564	8,000	4,512
	.513	10,000	5,130
	.467	15,000	7,005
	.424	10,000	4,240
	.386	<u>4,000</u>	<u>1,544</u>
		<u>82,000</u>	<u>48,961</u>

Net Present Value Rs.48,961- 40,000 or Rs.8,961.

(c) Profitability Index at 10% discounting factor:

$$= \frac{\text{Sum of the discounted cash inflows}}{\text{Sum of the discounted cash outflows}}$$

$$= \frac{48,961}{40,000} = 1.22$$

(d) The internal rate of return is 14.7% calculated as below:

Present value of cash inflow at 15%.

Year	Net Cash Inflow Rs.	Discount Factor	Present Value Rs.
1 - 5	7,000(p.a.)	3.353(cumulative)	23,471
6	8,000	0.432	3,456
7	10,000	0.376	3,760

8	15,000	0.327	4,905
9	10,000	0.284	2,840
10	4,000	0.247	<u>988</u>
			39,420

Since the net present value at 15% rate of discount is negative, the internal rate of return (IRR) is lower than 15%. But it is higher than 10% since at that rate of discount the net present value was positive [see (b)] above. The exact I.R.R. can be calculated as below:

$$10 + \frac{48,961}{48,961} - \frac{40,000}{39,420} \times 5\%$$

$$= 10\% + \frac{8,961 \times 5}{9,541} = 10\% + \frac{44,805}{9,541} = 10\% + 4.7 = 14.7\%$$

16.

Chennai.
15-7-2007

The Managing Director,
Precision Engineers Private Ltd.

Dear Sir,

As desired by you I have examined the relative profitability of contracts X and Y and the present production position. Since variable labour and factory costs as well as the fixed overheads remain the same under the three alternatives, the relative profitability can be judged by comparing the differential cost and working out the contribution per critical machine hour generated by each of the three alternatives. The position is as below:

Statement Showing Differential Costs under the Three Alternatives

	Present Position (Rs. in lakhs)	Contract X Rs.	Contract Y Rs.
Sales:	48.00	1,500	3,750
Less: Differential costs:			
Materials	18.00	375	1,750
Extra Selling Expenses	-	25	50
	18.00	400	1800
Contribution before meeting variable production costs and fixed overheads	30.00	1,100	1,950
No. of hours in which this is earned	4800	2	3
Contribution per critical machine hour	625	550	650

It is clear from the above statement that between the three alternatives, contract Y is the most profitable since it gives the highest contribution per critical machine hour. The second best would be to continue carrying out the present production as the contribution per critical machine hour is more than contract X. If only Y is produced next year, the total profit would be Rs.6.20 lakhs (650x 4,800 = 31,20,000 minus Rs.25,00,000 being variable production and fixed overheads). If

X is produced, the total profit would be Rs.1.40 lakhs ($550 \times 4,800 = \text{Rs.}26,40,000 - \text{Rs.}25,00,000$). Hence it is suggested that contract Y be taken up.

Yours faithfully,

A.B.C.

Chartered Accountants

17. Project A, B, C and D are mutually exclusive, i.e., adoption of one precludes undertaking any of the others. Selection of the optimum project on the basis of the highest internal rate of return is not considered to be entirely satisfactory in such situations. It is possible that a different selection would be made if the projects were evaluated on the basis of Net Present Value.

Most experts, with the exception of Merrett and Sykes, agree that, for mutually exclusive projects, the net present value method of capital investment appraisal is superior to the internal rate of return method for the following reasons:

- (i) The internal rate of return method provides a measure of the return of the project per unit of capital outlay but does not indicate the size of the return; for example, if the rates of return of projects A and B were interchanged, would management prefer a 22 per cent return on Rs.1,50,000 or a 15 per cent return on Rs.300,000.
- (ii) The internal rate of return method represents an average affected by the magnitude and timing of cash outlays and inflows; in common with all averages, it comprises a mixture of good, very good and indifferent; in the situation described, the optimum investment could be to select project A and invest Rs.150,000 in an alternative project, a course of action which would not be revealed by the procedure used.
- (iii) In certain non-conventional cash-flow patterns, the internal rate of return method may produce multiple answers. Typically, this will happen when the cash flow pattern has early inflows. Followed by later outflows which are then followed by further inflows.

Evaluation of the projects, using the net present value method and based on the company's cost of capital of 10 per cent see below.

The table on next page shows the relative amounts of the present net 'worth' of projects A, B, C and D and indicates that project C should be selected as it will generate the more wealth in present value terms.

It is considered that the net present value method is superior for ranking investment projects, because:

- (i) In most situations, management has the objective of maximizing wealth; selection on the basis of net present value conforms with that objective;
- (ii) A choice between mutually exclusive projects which involve different investment amounts should be made after consideration of alternative investment opportunities; use of the N.P.V. method facilitates preparation of an optimum investment programme.

It must be emphasized that neither I.R.R. nor N.P.V. provide final conclusions and the following considerations need to be borne in mind before a decision can be made to select a particular project:

- (i) taxation;
- (ii) risk and uncertainty;
- (iii) effect of the project on the company's general investment plan;
- (iv) reinvestment possibilities in respect of projects B and D which have short pay-back periods; and
- (v) restrictions on capital available.

Year	Net Annual cash flow				10 per cent Present value factor	Present Value			
	A	B	C	D		A	B	C	D
	Rs.000's	Rs.000's	Rs.000's	Rs.000's		Rs.000's	Rs.000's	Rs.000's	Rs.000's
0	-150	-300	-300	-75	1.00	-150	-300	-300	-75.0
1	30	105	—	34½	.91				
2	30	105	—	30	.83				
3	30	105	—	15	.75				
4	30	105	—	15	.68				
5	30	105	—	—	.62	184			
6	30	—	300	—	.56				
7	30	—	300	—	.51				
8	30	—	300	—	.47				
9	30	—	300	—	.42				
10	30	—	—	—	.39				
Net present value						+34	+98	+288	+2.7

18.

New Delhi
July 15, 2007

The Directors,
Alfa Engineering Works Ltd.,
Faridabad.
Dear Sirs,

As desired, we have examined the cost implications of the decision of temporary closure of the factory in view of trade recession. If the factory is run at 40% capacity during the whole period of recession say, one year and with reduced selling prices, the likely loss would be about Rs.7.17 lakhs as detailed below:

Capacity	40%
	(Rs. in lakhs)
Direct Materials	6.40
Director Labour	4.80
Factory Expenses	7.08
Administrative Expenses	3.56
Selling & Distribution Expenses	<u>3.84</u>
	25.68
Less: Sales (Sales @ 40% capacity = 24.68 lakhs, its 75% works out to 18.51 lakhs)	<u>18.51</u>
Loss	<u>7.17</u>

If the factory is closed, the following costs will be incurred:

	(Rs. in lakhs)
Fixed costs	6.0
Closing down costs	2.0
Maintenance costs	0.5
Cost of overhauling, training and engagement of staff	<u>0.8</u>
	<u>9.3</u>

It is clear from the above calculations, that despite the fact that running the factory at 40% capacity would imply a loss of Rs.7.17 lakhs, it is better not to close down the factory since in that case the loss would be higher – Rs.9.3 lakhs. Moreover, the revenues are expected to be Rs.40 lakhs. Hence, the chances of incurring loss are remote.

Furthermore, we are of the opinion that in such cases like depression, temporary set-backs, etc., it is always advisable to run a factory at a low percentage capacity since the loss is higher in closing down the factory. Closure, though temporary would result in the loss of regular and old customers, supplies and skilled personnel. Besides these losses, closure also results in loss of goodwill in the market and finally at the time of reopening of the factory may involve a substantial losses on various counts.

In view of our analysis of the situation, we hope that you will be able to arrive at an appropriate decision in the matter. We shall be glad to make any clarification in this regard.

Thanking you

Yours faithfully,

XYZ & Associates

Chartered Accountants

Note: Factory expenses have risen from Rs.7.56 lakhs to Rs.8.04 lakhs between 60% and 80% capacity utilization, i.e. Rs.0.48 lakh per 20% capacity. Likewise, Administrative expenses by Rs.0.16 lakh per 20% capacity and selling and distribution expenses by Rs.0.24 lakh for the same capacity. These expenses have been reduced accordingly from 60% to 40% capacity proportionately.

19.

Comparative Profit Statement

(Rs. in Crores)

	Existing	When marketing is done through dealers	
	Rs.	At 5% Commission on Sales	At 4% Commission on Sales
		Rs.	Rs.
Sales	200.00	240.00	240.00
Cost of goods sold (90% of sale)	180.00	216.00	216.00
Contribution (A)	20.00	24.00	24.00
Expenses:			
Administrative expenses (5000 x 4000)	2.00	—	—
Staff salaries (Rs. (80000x 400)	3.20	1.60*	1.60*
Inventory carrying cost	3.20	—	—
Other fixed cost	10.10	10.10	10.10

Commission on sales	—	12.00	9.60
Total fixed expenses (B)	18.50	23.70	21.30
Profit (A-B)	1.50	0.30	2.70
Add savings on account of Interest on Deposit	—	0.20	0.20
Net Profit	1.50	0.50	2.90

*When marketing is done through dealers, 50% of the staff will be retained by the company.

- (i) It is clear from the above profit statement that if the proposal is accepted, the existing profit of Rs.150 lakhs will be reduced to Rs.50 lakhs only. Hence, the proposal should not be accepted.
- (ii) If the commission to dealers on sales is 4%, the total net profit will be Rs.2.90 crores, a net increase of Rs.1.40 crores in the current profits. Hence the proposal to resort to dealership arrangement with 4% commission on sales should be accepted.

Working Notes:

- (i) When capacity utilization increases from 75% to 90%, the total turnover will be Rs.240 crores, i.e., Rs. $\frac{200 \times 90}{75}$
 - (ii) Total fixed costs are Rs.18.50 crores, i.e., Rs.20 crores. (less Rs.1.50 crores profit). Hence other fixed costs will be Rs.10.10 crores, i.e., Rs.18.50 – (2.00+3.20+3.20) crores.
 - (iii) The difference between the two interest rates, i.e., rate for working capital finance and rate on deposits from dealers is 4%. Hence, the company will have a net savings of Rs.20 lakhs, i.e., 4% on Rs.5 crores, in interest costs in case of dealership arrangement.
20. (a) Financial Leverage = PBIT/PBT
- $$1.4 = \text{PBIT} / (\text{PBIT} - \text{Interest})$$
- $$1.4 = \text{PBIT} / (\text{PBIT} - 40)$$
- $$1.4 (\text{PBIT} - 40) = \text{PBIT}$$
- $$1.4 \text{ PBIT} - 56 = \text{PBIT}$$
- $$1.4 \text{ PBIT} - \text{PBIT} = 56$$
- $$0.4 \text{ PBIT} = 56$$
- $$\text{or PBIT} = \frac{56}{0.4} = \text{Rs.140 lakhs}$$
- $$\text{NOPAT} = \text{PBIT} - \text{Tax} = \text{Rs. 140 lakhs} (1 - 0.40) = \text{Rs. 84 lakhs.}$$
- $$\text{Weighted average cost of capital (WACC)} = 17.5\% \times (300 / 700) + (1 - 0.30) \times (10\%) \times (400 / 700) = 11.5\%$$
- $$\text{EVA} = \text{NOPAT} - (\text{WACC} \times \text{Total Capital})$$
- $$= \text{Rs.84 lakhs} - (0.115 \times \text{Rs. 700 lakhs})$$
- $$= \text{Rs. 3.5 lakhs}$$

(b)

Scheme	Investment	Unit Nos.	Unit NAV 31.3.2004	Total NAV 31.3.2004
	Rs.		Rs.	Rs.
MFA	50,000	4761.905	10.40	49,523.812
MFB	1,00,000	10,000	10.10	1,01,000
MFC	50,000	5,000	9.80	49,000

Scheme	NAV (+) / (-)	Dividend Received	Total Yield	Number of days	Effective Yield (% P.A.)
	Rs.	Rs.	Rs.		
MFA	(-)476.188	950	473.812	122	2.835%
MFB	(+)1,000	1,500	2,500	91	10.027%
MFC	(-)1,000	Nil	(-)1,000	31	(-)24%

- (c) Exposure Netting refers to offsetting exposures in one currency with Exposures in the same or another currency, where exchange rates are expected to move in such a way that losses or gains on the first exposed position should be offset by gains or losses on the second currency exposure.

The objective of the exercise is to offset the likely loss in one exposure by likely gain in another. This is a manner of hedging forex exposures though different from forward and option contracts. This method is similar to portfolio approach in handling systematic risk.

For example, let us assume that a company has an export receivables of US\$ 10,000 due 3 months hence, if not covered by forward contract, here is a currency exposure to USD.

Further, the same company imports US\$ 10,000 worth of goods/commodities and therefore also builds up a reverse exposure. The company may strategically decide to leave both exposures open and not covered by forward, it would be doing an exercise in exposure netting.

Despite the difficulties in managing currency risk, corporates can now take some concrete steps towards implementing risk mitigating measures, which will reduce both actual and future exposures. For years now, banking transactions have been based on the principle of netting. Where only the difference of the summed transactions between the parties is actually transferred. This is called settlement netting. Strictly speaking in banking terms this is known as settlement risk. Exposure netting occurs where outstanding positions are netted against one another in the event of counter party default.

- (d) The capital market deals in financial assets. Financial assets comprises of shares, debentures, mutual funds etc. The capital market is also known as stock market.

Stock market and money market are two basic components of Indian financial system. Capital market deals with long and medium term instruments of financing while money market deals with short term instruments.

Some of the points of distinction between capital market and money market are as follows:

Money Market	Capital Market
(i) There is no classification between primary market and secondary market	There is a classification between primary market and secondary market.
(ii) It deals for funds of short-term requirement.	It deals with funds of long-term requirement.

- (iii) Money market instruments include interbank call money, notice money upto 14 days, short-term deposits upto three months, commercial paper, 91 days treasury bills. Capital Market instruments are shares and debt instruments.
- (iv) Money market participants are banks, financial institution, RBI and Government. Capital Market participants include retail investors, institutional investors like Mutual Funds, Financial Institutions, corporate and banks.

21. (a) Capital sum to be placed under Lease

			Rs. In lakhs
Cash down price of machine			300.00
Less: Present value of depreciation			
Tax Shield	$100 \times .35 \times \frac{1}{(1.10)}$	31.82	
	$100 \times .35 \times \frac{1}{(1.10)^2}$	28.93	
	$100 \times .35 \times \frac{1}{(1.10)^3}$	26.30	<u>87.05</u>
			<u>212.95</u>

If the normal annual lease rent per annum is x , then cash flow will be:

Year	Post-tax cash flow	P.V. of post-tax cash flow
1	$3x \times (1 - .35) = 1.95x$	$1.95x \times (1/1.10) = 1.7727x$
2	$2x \times (1 - .35) = 1.3x$	$1.30x \times [(1/(1.10)^2)] = 1.0743x$
3	$x \times (1 - .35) = 0.65x$	$0.65x \times [1/(1.10)^3] = 0.4884x$
		<u>$= 3.3354x$</u>

Therefore $3.3354x = 212.95$ OR $x = \text{Rs. } 63.8454 \text{ lakhs}$

Year-wise lease rentals:	Rs. in lakhs
Year 1 $3 \times 63.8454 \text{ lakhs}$	$= 191.54$
2 $2 \times 63.8454 \text{ lakhs}$	$= 127.69$
3 $1 \times 63.8454 \text{ lakhs}$	$= 63.85$

- (b) Net Asset Value (NAV) is the total asset value (net of expenses) per unit of the fund calculated by the Asset Management Company (AMC) at the end of every business day. Net Asset Value on a particular date reflects the realizable value that the investor will get for each unit that he is holding if the scheme is liquidated on that date.

The performance of a particular scheme of a mutual fund is denoted by Net Asset Value (NAV). Net Asset Value may also be defined as the value at which new investors may apply to a mutual fund for joining a particular scheme.

It is the value of net assets of the fund. The investors' subscription is treated as the capital in the balance sheet of the fund, and the investments on their behalf are treated as assets. The NAV is calculated for every scheme of the MF individually.

$$\text{The Net Asset Value (NAV)} = \frac{\text{Net Assets of the scheme}}{\text{Number of units outstanding}}$$

Net Assets of the scheme will normally be:

Market value of investments + Receivables + Accrued Income + Other Assets – Accrued Expenses – Payables – Other Liabilities

Since investments by a Mutual Fund are marked to market, the value of the investments for computing NAV will be at market value.

NAV of MF schemes are published on a daily basis in Newspapers and play an important part in investors' decisions to enter or to exit. Analyst use the NAV to determine the yield on the schemes.

22. (a)

Sl. No.	Company Name	Trend	Amount (Rs.)	Beta	Index Value (Rs.)	Position
(i)	Right Ltd.	Rise	50 lakh	1.25	62,50,000	Short
(ii)	Wrong Ltd.	Depreciate	25 lakh	0.90	22,50,000	Long
(iii)	Fair Ltd.	Stagnant	20 lakh	0.75	<u>15,00,000</u>	Long
					<u>25,00,000</u>	Short

- (b) Forfeiting was developed to finance medium to long term contracts for financing capital goods. It is now being more widely used in the short-term also especially where the contracts involve large values. There are specialized finance houses that deal in this business and many are linked to some of main banks.

This is a form of fixed rate finance which involves the purchase by the forfeiture of trade receivables normally in the form of trade bills of exchange or promissory notes, accepted by the buyer with the endorsement or guarantee of a bank in the buyer's country.

The benefits are that the exporter can obtain full value of his export contract on or near shipment without recourse. The importer on the other hand has extended payment terms at fixed rate finance.

The forfeiture takes over the buyer and country risks. Forfeiting provides a real alternative to the government backed export finance schemes.

Factoring can however, broadly be defined as an agreement in which receivables arising out of sale of goods/services are sold by a "firm" (client) to the "factor" (a financial intermediary) as a result of which the title to the goods/services represented by the said receivables passes on to the factor. Henceforth, the factor becomes responsible for all credit control, sales accounting and debt collection from the buyer(s). In a full service factoring concept (without recourse facility) if any of the debtors fails to pay the dues as a result of his financial instability/insolvency/bankruptcy, the factor has to absorb the losses.

Some of the points of distinction between forfeiting and factoring have been outlined in the following table.

Factoring	Forfeiting
This may be with recourse or without recourse to the supplier.	This is without recourse to the exporter. The risks are borne by the forfeiter.
It usually involves trade receivables of short maturities.	It usually deals in trade receivables of medium and long term maturities.
It does not involve dealing in negotiable instruments.	It involves dealing in negotiable instrument like bill of exchange and promissory note.
The seller (client) bears the cost of factoring.	The overseas buyer bears the cost of forfeiting.
Usually it involves purchase of all book debts or all classes of book debts.	Forfeiting is generally transaction or project based. Its structuring and costing is case to case basis.
Factoring tends to be a 'case of' sell of debt obligation to the factor, with no secondary market.	There exists a secondary market in forfeiting. This adds depth and liquidity to forfeiting.

23. (a) (i) Company A:

Year	Return % (Ra)	Market return % (Rm)	Deviation R(a)	Deviation Rm	D Ra × DRm	Rm ²
1	13.0	12.0	1.57	1.33	2.09	1.77
2	11.5	11.0	0.07	0.33	0.02	0.11
3	<u>9.8</u>	<u>9.0</u>	-1.63	-1.67	<u>2.72</u>	<u>2.79</u>
	<u>34.3</u>	<u>32.0</u>			<u>4.83</u>	<u>4.67</u>

Average Ra = 11.43

Average Rm = 10.67

$$\text{Covariance} = \frac{4.83}{2} = 2.42$$

$$\beta = \frac{2.42}{2.34} = 1.03$$

Company B:

Year	Return % (Ra)	Market return % (Rm)	Deviation R(a)	Deviation Rm	D Ra × D Rm	Rm ²
1	11.0	12.0	0.67	1.33	0.89	1.77
2	10.5	11.0	0.17	0.33	0.06	0.11
3	<u>9.5</u>	<u>9.0</u>	-0.83	-1.67	<u>1.39</u>	<u>2.79</u>
	<u>31.0</u>	<u>32.0</u>			<u>2.34</u>	<u>4.67</u>

Average Ra = 10.33

Average Rm = 10.67

$$\text{Covariance} = \frac{2.34}{2} = 1.17$$

$$\beta = \frac{1.17}{2.34} = 0.50$$

- (ii) Systematic risk refers to the variability of return on stocks or portfolio associated with changes in return on the market as a whole. It arises due to risk factors that affect the overall market such as changes in the nations' economy, tax reform by the Government or a change in the world energy situation. These are risks that affect securities overall and, consequently, cannot be diversified away. This is the risk which is common to an entire class of assets or liabilities. The value of investments may decline over a given time period simply because of economic changes or other events that impact large portions of the market. Asset allocation and diversification can protect against systematic risk because different portions of the market tend to under perform at different times. This is also called market risk.

Unsystematic risk however, refers to risk unique to a particular company or industry. It is avoidable through diversification. This is the risk of price change due to the unique circumstances of a specific security as opposed to the over all market. This risk can be virtually eliminated from a portfolio through diversification.

(b) Particulars	Mark Ltd.	Mask Ltd.
EPS	Rs. 2,000 Lakhs/ 200 lakhs = Rs. 10	Rs. 400 lakhs / 100 lakhs Rs. 4
Market Price	Rs. 10 × 10 = Rs. 100	Rs. 4 × 5 = Rs. 20

- (i) The Swap ratio based on current market price is
 Rs. 20 / Rs. 100 = 0.2 or 1 share of Mark Ltd. for 5 shares of Mask Ltd.
 No. of shares to be issued = Rs. 100 lakh × 0.2 = Rs. 20 lakhs.

- (ii) EPS after merger

$$= \frac{\text{Rs. 2,000 lakhs} + \text{Rs. 400 lakhs}}{200 \text{ lakhs} + 20 \text{ lakhs}}$$

$$= \text{Rs. 10.91}$$

- (iii) Expected market price after merger assuming P / E 10 times.
 = Rs. 10.91 × 10 = Rs. 109.10

- (iv) Market value of merged firm

$$= \text{Rs. 109.10 market price} \times 220 \text{ lakhs shares} = 240.02 \text{ crores}$$

Gain from the merger

Post merger market value of the merged firm Rs. 240.02 crores

Less: Pre-merger market value

Mark Ltd. 200 Lakhs × Rs. 100 = 200 crores

Mask Ltd. 100 Lakhs × Rs. 20 = 20 crores Rs. 220.00 crores

Gain from merger Rs. 20.02 crores

Appropriation of gains from the merger among shareholders:

	Mark Ltd.	Mask Ltd.
Post merger value	218.20 crores	21.82 crores
Less: Pre-merger market value	200.00 crores	20.00 crores
Gain to Shareholders	18.20 crores	1.82 crores

- (c) **Intrinsic value of an Option:** Intrinsic value of an option and the time value of an option are primary determinants of an option's price. By being familiar with these terms and knowing how to use them, any one will find himself in a much better position to choose the option contract that best suits his particular investment requirements.

Intrinsic Value is the value that any given option would have if it were exercised today. It is defined as the difference between the option's strike price (X) and the stock's actual current price (CP). In the case of a call option, you can calculate this intrinsic value by taking $CP - X$. If the result is greater than zero (in other words, if the stock's current price is greater than the option's strike price), then the amount left over after subtracting $CP - X$ is the option's intrinsic value. If the strike price is greater than the current stock price, then the intrinsic value of the option is zero – it would not be worth anything if it were to be exercised today (please note that an option's intrinsic value can never be below zero. To determine the intrinsic value of a put option, simply reverse the calculation to $X - CP$).

To illustrate, let us assume Wipro stock is priced at Rs. 105. In this case, a Wipro 100 call option would have an intrinsic value of (Rs. 105 – Rs. 100 = Rs 5). However, a Wipro 100 put option would have an intrinsic value of zero (Rs. 100 – Rs. 105 = Rs. –5). Since this figure is less than zero, the intrinsic value is zero. Again, intrinsic value can never be negative). On the other hand, if we were to look at a Wipro put option with a strike price of 120, then this particular option would have an intrinsic value of Rs. 15 (Rs. 120 – Rs. 105 = Rs. 15).

Time Value: This is the second component of an option's price. It is defined as any value of an option other than its intrinsic value. Looking at the example above, if Wipro is trading at Rs. 105 and the Wipro 100 call option is trading at Rs. 7, then we would say that this option has Rs. 2 of time value (Rs. 7 option price – Rs. 5 intrinsic value = Rs. 2 time value). Options that have zero intrinsic value are comprised entirely of time value. Time value is basically the risk premium that the seller requires to provide the option buyer with the right to buy/sell the stock up to the expiration date. This component may be regarded as the "insurance premium" of the option. This is also known as extrinsic value. Time value decays over time. In other words, the time value of an option is directly related to how much time an option has until expiration. The more time an option has until expiration, the greater the chances of option ending up in the money.

24. (A) Forward Market

- | | |
|---------------------------------|-------------|
| (i) Exposure | = \$ 364897 |
| (ii) Forward Rate 1£ = \$1.5455 | |
| (iii) Outflow (6 month later) | = £ 236103 |

(B) Cash (Money Market)

- | | |
|--|------------|
| (i) Maturity in \$ after 6 months | = \$364897 |
| (ii) Present value of $\{\$364897 / (1 + (0.045/2))\}$ | = \$356867 |
| (iii) Borrow at spot to make up \$356867
(at 1£ = \$1.5617) | = £ 228512 |

(iv) Amount to be discharged including interest = £ 236510 i.e.

$$£228512 \left(\frac{0.07}{2} \right)$$

(C) Currency options =17.17 contracts

- (i) Number of contracts 364897/21250
(can be rounded off to 17 contracts)
- (ii) Exposure covered through put option 17*21250 = \$361250
- (iii) Balance to be covered through forward market \$3647
- (iv) Premia payable in (17x21250x 0.096) \$34680

(v) premia payable in £22207 [use spot Bid] $\left(\frac{\$34680}{1.5617} \right)$

	<u>Put option</u>	<u>Forward</u>
Exposure covered	\$361250	\$3647
	£	£
Premia	22207	-
17 contract pyt. 17* 12500	212500	-
Forward pyt. 3647/1.5455		2360
	234707	2360
Total outflow		£237067

Strategy: Choose forward market because of lower cash outflow

Note :

The quote is indirect one.

the quote is for per pound, expressed in dollars

one unit or contract is equal to £12500 or \$21250 (12500 x 1.70)

Normally under direct quote situations, importing firm would hedge the positions by holding call options whereas UK based importing company would hedge by holding put option.

[Rationale: Instead of claiming purchase of dollars to settle the supplier, the UK company would sell pounds]

Similarly importing company used to purchase foreign currency at offer rate [selling price of authorised dealer is the purchase price of importing company]. But in London on account of indirect quote, importers use bid rate.

Time value of money for the payment of premia is ignored.

25.	Company A	Company B
Fixed Rate	5%	6.5%
Floating Rate	LIBOR +0.5%	LIBOR +1.0%
Desired	LIBOR +0.5%	6.5%
After Interest Rate Swap	LIBOR +1.0%	5%
(Gain) / Loss	+0.5	(1.5)

Compensating the loss	(0.5)	+0.5
Net position	-	(1.0)
Payable to financial institution (50 basis points)	-	+0.5
Net Income	-	(0.5)
Shared equally	(0.25)	+0.25
Revised position	(0.25)	(0.25)
Desired Position	LIBOR +0.5%	6.5%
Rate applicable after IRS	LIBOR +0.25%	6.25%

26. (a) Cash outflow premium = 10,00,000 x 0.03	=	DM 30,000
Interest Cost = 6% for 180 days on DM 30,000	=	900
	=	30,900
Value of \$10,00,000 at strike price	=	16,00,000
		<u>16,30,900</u>

$$\text{Break Even Rate} = 16,30,900 \div 10,00,000 = \text{DM } 1.6309/\$$$

(b) Forward Rate for 6 month = DM 1.62/\$

Option would prove better so long as the cost under option is cheaper than that of the forward.

Cost under forward is DM 1.6200/\$

Break Even Rate under the option is DM 1.6309/\$ (1.60 + 0.0309)

The cost under option is the cost of option premium (\$0.0309) together with cost of funds and the maturity spot price so long as the maturity spot price is less than or equal to the option strike price. If the maturity spot price is more than the strike price, then the cost is strike price + Option premium together with cost of funds.

Maturity Spot rate	Cost under option	Cost under forward
1.5800	1.6109=1.5800+0.0309	1.62
1.5890	1.6199=1.5890+0.0309	1.62
1.5891	1.6200=1.5891+0.0309	1.62
1.5892	1.6201=1.5892+0.0309	1.62
1.5900	1.6209=1.5900+0.0309	1.62
1.6000	1.6309=1.6000+0.0309	1.62
1.6100	1.6309 (remains constant)	1.62
1.6200	1.6309 (remains constant)	1.62

Hence the option proves to be beneficial so long as the Maturity spot rate is less than 1.5891.

27. Growth rate ascertainment

$$d_{97} = 2.115$$

$$d_{02} = 3$$

No. of years lapsed = 6 years

$$MV = PV (1+g)^6$$

$$3 = 2.115 (1+g)^6$$

$$g = 6\%$$

$$d_0 = 3$$

$$d_1 = d_0 (1+g)$$

$$d_1 = 3 \times 1.06 = 3.18$$

$$r_s = k_e = r_f + (r_m - r_f) \times \beta$$

$$= 10 + (5 \times 1.6)$$

$$= 18\%$$

$$P_0 = \frac{d_1}{k_2 - g}$$

$$= \frac{3.18}{0.18 - 0.06}$$

$$= \text{Rs.} 26.5$$

28.	Securities	Expected Return (1)	Risk	Proportion (2)	Return from portfolio (3)=(1)x(2)
	A	12	3	0.8	9.6
	B	20	7	0.2	4.0
					13.6

$$\text{Risk of a portfolio} = \sqrt{(P_a^2 \times \sigma_a^2) + (P_b^2 \times \sigma_b^2) + (2P_a \times P_b \times \sigma_a \times \sigma_b) \times \text{Cor}(a, b)}$$

$$\text{Risk (when Corr} = +1) = \sqrt{(3^2 \times 0.8^2) + (7^2 \times 0.2^2) + (2 \times 3 \times 7 \times 0.8 \times 0.2 \times 1)}$$

$$\text{Risk of portfolio} = 3.8$$

$$\text{Alternatively} = \sqrt{a^2 + b^2 + 2ab} = \sqrt{(a+b)^2}$$

$$\text{Risk of Portfolio} = a+b, \text{ where } a=0.8 \times 3; b=0.2 \times 7$$

$$= 3.8$$

when Corr = -1 and risk being 0

$$\text{Risk} = \sqrt{a^2 + b^2 - 2ab}$$

$$= \sqrt{(a-b)^2}$$

$$\text{Risk} = 0 = a - b$$

$$a = p \times 3$$

$$b = (1-p) \times 7$$

$$3p - 7 + 7p = 0$$

$$P = 70\%$$

29 (a) The Impact of taxation on Corporate Financial Management:

The tax payments represent a cash outflow from business and therefore, these tax cash outflows are critical part of the financial decision making in a business. Taxation affects a firm in numerous ways, the most significant effects are as under :

1. Tax implications and Financial Planning: While considering the financial aspects or arranging the funds for carrying out the business, the tax implications arising therefrom should also be taken into account. The Income of all business undertakings is subject to tax at the rates given in Finance Act.

The weighted average cost of capital is reduced because interest payments are allowable for computing taxable income.

2. Where a segment of the firm incurs loss, but the firm gets overall profits from other segments, loss of loss making segment will reduce the overall tax liability of the firm by set off of losses.
3. The Income Tax Act allows depreciation on machinery, plant, furniture and buildings owned by the assessee and used by him for carrying on his business, occupation, profession. This depreciation is allowed for full year if an asset was used for the purposes of business or profession for more than 180 days. Unabsorbed depreciation can be carried forward for eight years. Further, depreciation will also be available on intangible assets acquired on or after 1.4.1998 owned by the assessee and used for the purpose of his business.
4. Capital Budgeting decisions: The setting up of a new project involves consideration of the tax effects. The decision to set up a project under a particular form of business organization, at a particular place, choice of the nature of the business and the type of activities to be undertaken etc. requires that a number of tax considerations should be taken into account before arriving at the appropriate decision from the angle of sound financial management. The choice of a particular manufacturing activity may be influenced by the special tax concessions available such as
 - (i) Higher depreciation allowance
 - (ii) Amortisation of expenditures on know-how, scientific research related to business, preliminary expenses, etc.
 - (iii) Deductions in respect of profit derived from the publications of books etc.
 - (iv) Deductions in respect of profit derived from export business.

- (b) (i) Before buy back xyz is all equity financed and the equity beta is 0.6 and the expected return on equity is 20 per cent. Thus the firm's asset beta is 0.6 and the firm's cost of capital is 20 per cent. Over all firm value will not change after the buy back and that the debt is risk-free.

$$\text{Beta}_A = \frac{D}{D+E} (\text{Beta}_D) + \frac{E}{D+E} (\text{Beta}_E)$$

$$.6 = .5 \times 0 + .5 \times \text{Beta}_E$$

$$\text{or Beta}_E = 1.20$$

- (ii) Before financing, the required rate of return on equity is 20 per cent and the risk-free rate is 10 per cent. Thus the risk premium on equity is 10 per cent.*

* If beta = .6 is considered then Risk Premium will be = .1667. i.e. 16.67%

Calculated as follows

$$r_A = r_f + (r_m - r_f) \times \beta$$

$$20 \text{ per cent} = 10 + (x - 10) \times .6$$

$$10 = (x - 10)^{x(0.6)}$$

$$x = \frac{10}{0.6} = 16.67 \text{ per cent}$$

(iii) After financing

$$r_A = \frac{D}{D+E} r_{E^d} + \frac{E}{D+E} r_E$$

$$.20 = .5 \times .10 + .5 \times r_E \text{ OR } r_E = \frac{.20 - .05}{.5} = .30 \text{ or } 30\%.$$

Thus, the risk premium on Equity is 20 per cent.*

* If beta = 1.2 is considered then Risk Premium will be = .1667. i.e. 16.67% calculated as follows

$$30 = 10 + (r_m - 10) \times 1.2$$

$$\text{Risk Premium} = \frac{20}{1.2} = 16.67\%$$

(iv) The required rate of return on debt is 10 per cent i.e. risk free rate.

(v) The percentage increase in EPS has been calculated as follows by assuming the following figures.

	Before buyback	After buyback
Equity	100	50
Debt @ 10%	Nil	<u>50</u>
	100	100
EBIT @ 20%	20	20
Interest	Nil	5
Earnings before tax	20	15
Tax	Nil	Nil
Earnings after tax	20	15
No. of shares	100	50
Earnings per share	0.2	0.3
P/E Ratio	5	3.33
Return on Equity	20%	30%

The percentage increase in EPS is 50 per cent i.e. $(0.3 - 0.2)/0.2 \times 100$
= 50 per cent

(vi) The new price-earning multiple is 3.33.

(c) Credit rating essentially reflects the probability of timely repayment of principal and interest by a borrower company. It indicates the risk involved in a debt instrument as well as its qualities. Higher the credit rating, greater is the probability that the borrower will make timely payment of principal and interest and vice-versa.

It has assumed an important place in the modern and developed financial markets. It is a boon to the companies as well as investors. It facilitates the company in raising funds in the capital market and helps the investor to select their risk-return trade-off. By indicating credit-

worthiness of a borrower, it helps the investor in arriving at a correct and rational decision about making investments.

Credit rating system plays a vital role in investor protection. Fair and good credit ratings motivate the public to invest their savings.

As a fee-based financial advisory service, credit rating is obviously extremely useful to the investors, the corporates (borrowers) and banks and financial institutions. To the investors, it is an indicator expressing the underlying credit quality of a (debt) issue programme. The investor is fully informed about the company as any effect of changes in business/economic conditions on the company is evaluated and published regularly by the rating agencies. The Corporate borrowers can raise funds at a cheaper rate with good rating. It minimises the role of the 'name recognition' and less known companies can also approach the market on the basis of their rating. The fund ratings are useful to the banks and other financial institutions while deciding lending and investment strategies.

30. The contract would be cancelled at the one month forward sale rate of Rs. 27.52.

Francs bought from customer under original forward contract at : Rs. 27.25

It is sold to him on cancellation at : Rs. 27.52

Net amount payable by customer per Franc Rs. 0.27

At Rs. 0.27 per Franc, exchange difference for CHF 10,000 is Rs. 2,700/-

Loss to the Customer:

Exchange difference (Loss) Rs. 2700

Note: The exchange commission and other service charges are ignored.

31. (a) Welsh Ltd.

Computation of annual loan repayment instalment

$$= \frac{\text{Loan amount}}{\text{Annuity factor of 15\%}} = \text{Rs. } \frac{1,26,965}{3.86} = \text{Rs. 32,892}$$

Note: Annuity factor is based on the assumption that loan instalment is repaid at the beginning of the year to be at par with lease rentals. Such annuity factor at 15% works out to be 3.86.

Computation of interest in debt payments

					(Rs.)
Year	0	1	2	3	4
Opening Balance of Principal	1,26,965	94,073	75,292	53,694	28,856
Interest @ 15%	_____	<u>14,111</u>	<u>11,294</u>	<u>8,054</u>	<u>4,036*</u>
Total	1,26,965	1,08,184	86,586	61,748	32,892
Repayment of Instalment	<u>32,892</u>	<u>32,892</u>	<u>32,892</u>	<u>32,892</u>	<u>32,892</u>
Closing Balance	<u>94,073</u>	<u>75,292</u>	<u>53,694</u>	<u>28,856</u>	<u>Nil</u>

*Difference between the instalment amount and opening balance of 4th year.

Schedule of Cash Outflows in debt financing

							(Rs.)
End of year	Annual loan repayment instalment	Interest @ 15%	Depreciation	Tax shield	Net cash outflows	PV factor at 9%	Present value of cash flow at 9%
	(1)	(2)	(3)	(4)	[[(2) + (3) × t] (1) – (4)]		(6)
0	32,892	—	—	—	32,892	1.00	32,892
1	32,892	14,111	25,393	15,802	17,090	0.92	15,723
2	32,892	11,294	25,393	14,675	18,217	0.84	15,302
3	32,892	8,054	25,393	13,379	19,513	0.77	15,025
4	32,892	4,036	25,393	11,772	21,120	0.71	14,995
5	—	—	25,393	10,157	(10,157)	0.65	<u>(6,602)</u>
Total							<u>Rs. 87,335</u>

Computation of Annual lease rentals:

$$= \frac{\text{Cost of assets}}{\text{Annuity factors of 10\%}} = \text{Rs. } \frac{1,26,965}{4.17} = \text{Rs. 30,447}$$

Schedule of Cash outflows – Leasing alternative

					(Rs.)
End of year	Lease payment	Tax shield	After tax cash out flows	PV factor at 9%	Present value of cash flow at 9%
0	30,447	—	30,447	1.00	30,447
1-4	30,447	12,179	18,268	3.24	59,188
5	—	12,179	(12,179)	0.65	(7,916)
Total Present Value =		81,719			

Decision: The present value of cash outflows under lease financing is Rs. 81,719 while that of debt financing (i.e. owning the asset) is Rs. 87,335. Thus leasing has an advantage over ownership in this case.

(b) Let the annual lease rentals be X.

Therefore, the after tax cost of lease rentals will be $0.60 \times$

Present value will be $0.60 \times 4.17 = 2.502 \times$

Equating $2.502 \times = \text{Rs. 87,335}$; the value of x is obtained at Rs. 34,906.

Therefore the lease rentals should be Rs.34,906 to match the loan option.

32.

(Amount Rs. in lakhs)

	X Ltd.	Y Ltd.	X Y Ltd.	Merger gains
Annual cash flows	15	8	25	--
Cost of capital	15%	15%	15%	---
Value of Business	225	120	375	30
Allocation of Merger gains				
Total Merger gain				30
Less: Cost of acquisition				
Consideration Paid to Y Ltd.			140	
Value of Y Ltd.			120	20
Merger gain available for the shareholders of X Ltd.				10

Conclusion: The shareholders of Y Ltd. are benefited more than the shareholders of X Ltd. since they have gained Rs.20 lakhs as compared with shareholders of X Ltd. who have gained Rs.10/- lakhs.